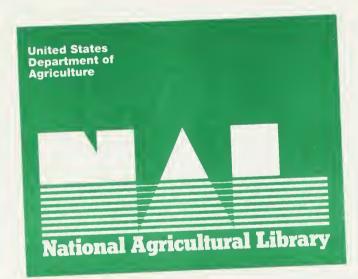
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## UNITED STATES STANDARDS

for grades of

# DEHYDRATED (Low Moisture) APPLES

First Issue As Amended

EFFECTIVE JULY 1, 1957

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL MARKETING SERVICE

FRUIT AND VEGETABLE DIVISION

PROCESSED PRODUCTS STANDARDIZATION AND INSPECTION BRANCH

These standards supersede the standards which have been in effect since November 29, 1955

This is the first issue, as amended, of the United States Standards for Grades of Dehydrated (Low-Moisture) Apples.

Previous issues of these standards were:

First Issue:
Amended:

Effective November 29, 1955 Effective July 1, 1957

These standards are included in the Code of Federal Regulations, Title 7 -- Agriculture, Part 52.

Issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality, the grade standards are for the voluntary use of producers, suppliers, buyers, and consumers. As in the case of other standards for grades of processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

These standards will also serve as a basis for the inspection and grading of this commodity by the Federal inspection service, which is also provided under the Agricultural Marketing Act of 1946. This service, available for inspection and grading of other processed products as well, is offered to interested parties, upon application, on a fee-for-service basis.

These standards are issued by the Department after careful consideration of all data and views submitted, and the Department welcomes suggestions which might aid in improving the standards in future revisions. Comments may be submitted to, and copies of standards obtained from:

Chief, Processed Products Standardization and Inspection Branch Fruit and Vegetable Division, AMS U.S. Department of Agriculture Washington, D.C. 20250

## UNITED STATES STANDARDS FOR GRADES OF DEHYDRATED (LOW-MOISTURE) APPLES 1

### Effective July 1, 1957

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AUTHORITY: §§ 52.2341 to 52.2352 issued under sec. 205, 60 Stat. 1090, as amended; 7 U. S. C. 1624.

#### PRODUCT DESCRIPTION, STYLES, AND GRADES

§ 52.2341 Product description. Dehydrated (low-moisture) apples, hereinafter referred to as "dehydrated apples," are prepared from clean and sound fresh or previously dried (or evaporated) apples from which the peels and cores have been removed and which have been cut into segments. The dried (or evaporated) apple segments may be cut further into smaller segments in prepara-

tion for dehydration whereby practically all of the moisture is removed to produce a very dry texture and are prepared to assure a clean, sound, wholesome product. The sulphur dioxide content of the finished product may not exceed 500 parts per million but no other additives may be present.

§ 52,2342 Styles of dehydrated apples—(a) Pie pieces. Pie pieces consist predominantly of parallel-cut, irregularly shaped pieces, approximating  $\frac{3}{16}$ inch or less in thickness and 3/4-inch or longer in their longest dimension.

(b) Flakes. Flakes consist predominantly of parallel-cut, irregularly shaped pieces, approximating  $\frac{3}{16}$ -inch or less in thickness and less than 3/4-inch in their longest dimension.

(c) Wedges. Wedges are fairly thick sectors, approximating no more than %-inch at their greatest thickness.

(d) Sauce pieces. Sauce pieces are small popcorn-like units of varying shapes and sizes, not otherwise conforming to the style of flakes, and in which practically all of the units when freeflowing will pass through 0.446-inch square openings. Sauce pieces of this style are considered "finely-cut" when practically all of the units will pass through \(^3\)\_inch square openings.

§ 52.2343 Grades of dehydrated apples. (a) "U. S. Grade A" or "U. S. Fancy" dehydrated apples is the quality of dehydrated apples in which the moisture content of the finished product is not more than 2.5 percent by weight: that possess a normal flavor and odor, that possess a good color, that are reasonably uniform in size, that are practically free from defects, that possess a good texture, and that for those factors

<sup>1</sup> Compliance with the requirements of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act.

which are scored in accordance with the scoring system outlined in this subpart the total score is not less than 85 points.

dehydrated apples is the quality of dehydrated apples in which the moisture content of the finished product is not more than 3.5 percent by weight; that possess a normal flavor and odor, that possess a reasonably good color, that are fairly uniform in size, that are reasonably free from defects, that possess a reasonably good texture, and that for those factors which are scored in accordance with the scoring system outlined in this subpart the total score is not less than 70 points.

(c) "Substandard" dehydrated apples is the quality of dehydrated apples that fail to meet the requirements of U. S.

Grade B or U. S. Choice.

#### FACTORS OF QUALITY

§ 52.2344 Ascertaining the grade. In addition to considering other requirements outlined in the standards, the following quality factors are evaluated:

(a) Factors not rated by score points.

(1) Moisture content.

(2) Flavor and odor.

(b) Factors rated by score points. The relative importance of each factor which is scored is expressed numerically on the scale of 100. The maximum number of points that may be given such factors are:

	Poi	ints
(1)	Color	20
(2)	Uniformity of size	20
(3)	Absence of defects	40
(4)	Texture	20
	-	
	Total score	100

(c) The factors of flavor and odor, color, and texture are acertained both upon the dehydrated apples and the cooked product as outlined in this subpart.

(d) "Normal flavor and odor" means that the dehydrated apples and the cooked product possess a characteristic flavor and odor that is free from objectionable flavors or objectionable odors of any kind. A flavor and odor in the dehydrated apples indicative of proper sulphur treatment is not considered objectionable.

§ 52.2345 Ascertaining the rating for the factors which are scored. The essential variations within each factor which is scored are so described that the value may be ascertained for each factor and expressed numerically. The numerical range within each factor which is scored is inclusive (for example, "17 to 20 points" means 17, 18, 19, or 20 points).

§ 52.2346 Color—(a) (A) classification. Dehydrated apples that possess a good color may be given a score of 17 to 20 points. "Good color" means that the dehydrated apples possess a reasonably uniform, reasonably bright, light yellow to yellow-white characteristic color which, upon cooking, is a reasonably bright color typical of cooked dehydrated apples that have been properly prepared

and processed.

(b) (B) classification. If the dehydrated apples possess a reasonably good color, a score of 14 to 16 points may be given. Dehydrated apples that fall into this classification shall not be graded above U. S. Grade B or U. S. Choice, regardless of the total score for the product (this is a limiting rule). "Reasonably good color" means that the dehydrated apples possess a fairly uniform, fairly bright, light yellow-amber or light yellow to yellow-white characteristic color and which, upon cooking, may be variable in color but is typical of cooked dehydrated apples that have been properly prepared and processed.

(c) (SStd) classification. Dehydrated apples that fail to meet the requirements of paragraph (b) of this section may be given a score of 0 to 13 points and shall not be graded above Substandard, regardless of the total score for the prod-

uct (this is a limiting rule).

§ 52.2347 Uniformity of size—(a) (A) Classification. Dehydrated apples that are reasonably uniform in size may be given a score of 17 to 20 points. "Reasonably uniform in size" has the following meanings for the respective styles:

(1) Pie pieces. (i) Not less than 75 percent, by weight, of the dehydrated apples are 3/4-inch or more in their longest dimension and of the units of this length not less than 35 percent, by

weight, of the dehydrated apples are 1 inch or more in their longest dimension;

(ii) Practically all of the units 3/4-inch or more in their longest dimension are 3/16-inch or less at their greatest thickness; and

(iii) Not more than 10 percent, by weight, of the dehydrated apples may be so fine as to pass through meshes of a U. S. Standard No. 4 sieve (0.187-inch, ±3 percent, square openings); but

(iv) Not more than 5 percent, by weight, of the dehydrated apples may pass through meshes of a U. S. Standard No. 8 sieve (0.0937-inch, ±3 percent,

square openings).

(2) Flakes. (i) Not less than 95 percent, by weight, of the dehydrated apples are less than \(^3\square\)\_4-inch in their longest dimension;

(ii) Practically all of such sized units are  $^3{}_{16}$ -inch or less at their greatest

thickness; and

(iii) Not more than 10 percent, by weight, of the dehydrated apples may be so fine as to pass through meshes of a U. S. Standard No. 8 sieve (0.0937-inch±3 percent, square openings); but

(iv) Practically none of the product may pass through meshes of a U. S. Standard No. 16 sieve (0.0469-inch±3

percent, square openings).

(3) Wedges. (i) Not less than 95 percent, by weight, of all the units are 1 inch or  $long \\in r$  in their longest dimension; and

(ii) Practically all of such sized units are 5%-inch or less at their greatest

thickness.

(4) Sauce pieces. (i) Not less than 95 percent, by weight, of the dehydrated apples are units of such size, or so fine, as to pass through 0.446-inch square openings;

(ii) Not more than 10 percent, by weight, of the dehydrated apples may be so fine as to pass through meshes of a U. S. Standard No. 8 sieve (0.0937-inch±

3 percent, square openings); but

(iii) Practically none of the product may pass through meshes of a U. S. Standard No. 16 sieve (0.0469-inch $\pm 3$ 

percent, square openings).

(b) (B) Classification. If the dehydrated apples are fairly uniform in size a score of 14 to 16 points may be given. Dehydrated apples that fall into this

classification shall not be graded above U.S. Grade B or U.S. Choice, regardless of the total score for the product (this is a limiting rule). "Fairly uniform in size" has the following meanings for the respective styles:

(1) Pie pieces. (i) Not less than 60 percent, by weight, of the dehydrated apples are 34-inch or more in their longest dimension and of the units of this length not less than 25 percent, by weight, of the dehydrated apples are 1 inch or more in their longest dimension;

(ii) Practically all of the units \(\frac{3}{4}\)-inch or more in their longest dimension are \(\frac{3}{16}\)-inch or less at their greatest thick-

ness; and

(iii) Not more than 15 percent, by weight, of the dehydrated apples may be so fine as to pass through meshes of a U. S. Standard No. 4 sieve (0.187-inch, ±3 percent, square openings); but

(iv) Not more than 5 percent, by weight, of the dehydrated apples may pass through meshes of a U.S. Standard No. 8 sieve (0.0937-inch, ±3 percent,

square openings).

(2) Flakes. (i) Not less than 85 percent, by weight, of the dehydrated apples are less than \(^3\)4-inch in their longest dimension;

(ii) Practically all of such sized units are 3/16-inch or less at their greatest

thickness; and

(iii) Not more than 5 percent, by weight, of the dehydrated apples may be so fine as to pass through meshes of a U. S. Standard No. 16 sieve (0.0469-inch, ±3 percent, square openings).

(3) Wedges. (i) Not less than 85 percent, by weight, of all the units are 1 inch or longer in their longest dimension; and

(ii) Practically all of such sized units are \(^{5}\_{8}\)-inch or less at their greatest thickness.

(4) Sauce pieces. (i) Not less than 85 percent, by weight, of the dehydrated apples are units of such size, or so fine, as to pass through 0.446-inch square openings; but

(ii) Not more than 5 percent, by weight, of the dehydrated apples may be so fine as to pass through meshes of a U. S. Standard No. 16 sieve (0.0469-inch, ±3 percent, square openings).

(c) (SStd) classification. Dehydrated

apples that fail to meet the requirements of paragraph (b) of this section may be given a score of 0 to 13 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§ 52.2348 Absence of defects—(a) Definitions of defects. The factor of absence of defects refers to the degree of freedom from carpel tissue; from units damaged by pieces of peel, bruises or other discoloration, bitter pit or corky tissue, water core, or damaged by other means; from units damaged by calyxes and stems; and from defects not specifically mentioned as defined in this paragraph.

(1) Practically free from carpel tissue. "Practically free from carpel tissue" means that for each 1¾ ounces of dehydrated apples any carpel tissue that may be present does not exceed in the aggregate an area equal to ½-square

inch.

(2) Reasonably free from carpel tissue. "Reasonably free from carpel tissue" means that for each 134 ounces of dehydrated apples any carpel tissue that may be present in the aggregate exceeds an area equal to ½-square inch but does not exceed an area equal to 1 square inch.

- (3) Damaged by pieces of peel. "Damaged by pieces of peel" means pieces of peel, regardless of color, which in their greatest dimension exceed ¼-inch.
- (4) Damaged by bruises or other discoloration; bitter pit or corky tissue, water core, and other similar defects. "Damaged by bruises or other discoloration, bitter pit or corky tissue, water core, and other similar defects" means the appearance or eating quality of the unit is materially affected by such defects.
- (5) Damaged by other means. "Damaged by other means" means defects not specifically mentioned which affect materially the appearance or edibility of the piece so damaged.
- (6) Damaged by calyxes and stems. "Damaged by calyxes and stems" means the appearance or eating quality of the unit is materially affected by such defects including portions thereof.

- (7) Defects not specifically mentioned. "Defects not specifically mentioned" include but are not limited to such apple materials as excessive loose seeds or loose stems which are not considered as damaged units and which singly or collectively affect materially the appearance or edibility of the product.
- (b) (A) Classification. Dehydrated apples that are practically free from defects may be given a score of 34 to 40 points. "Practically free from defects" means that dehydrated apples of any style are practically free from carpel tissue and defects not specifically mentioned and, in addition, has the following meanings for the respective styles:
- (1) Pie pieces; wedges. Not more than 10 percent, by weight, of all the units may be damaged by pieces of peel, bruises or other discoloration, bitter pit or corky tissue, water core, other means, calyxes, and stems: Provided, That not more than 1 percent, by weight, of all the units may be damaged by calyxes and stems.
- (2) Flakes; sauce pieces. Not more than 5 percent, by weight, of all the units may be damaged by pieces of peel, bruises or other discoloration, bitter pit or corky tissue, water core, other means, calyxes, and stems: Provided, That not more than  $\frac{1}{2}$  of 1 percent, by weight, of all the units may be damaged by calyxes and stems.
- (c) (B) classification. If the dehydrated apples are reasonably free from defects, a score of 28 to 33 points may be given. Dehydrated apples that fall into this classification shall not be graded above U. S. Grade B or U. S. Choice, regardless of the total score for the product (this is a limiting rule). "Reasonably free from defects" means that the dehydrated apples of any style are reasonably free from carpel tissue and defects not specifically mentioned and, in addition, has the following meanings for the respective styles:
- (1) Pie pieces; wedges. Not more than 15 percent, by weight, of all the units may be damaged by pieces of peel, bruises or other discoloration, bitter pit or corky tissue, water core, other means, calyxes, and stems: Provided, That not more than 2 percent, by weight, of ali

the units may be damaged by calyxes and stems.

- (2) 'Flakes; sauce pieces: Not more than 8 percent, by weight, of all the units may be damaged by pieces of peel, bruises or other discoloration, bitter pit or corky tissue, water core, other means, calyxes, and stems: Provided, That not more than 1 percent, by weight, of all the units may be damaged by calyxes and stems.
- (d) (SStd) classification. Dehydrated apples that fail to meet the requirements of paragraph (c) of this section may be given a score of 0 to 27 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).
- § 52.2349 Texture—(a) (A) classification. Dehydrated apples that possess a good texture may be given a score of 17 to 20 points. "Good texture" means with respect to the dehydrated product that the units are brittle; and, upon cooking in accordance with the methods outlined in this subpart, the textures of the respective styles are as follows:
- (1) Pie pieces; wedges. The units are reasonably uniform in tenderness and texture; are practically free from any tough (or "leathery") units; and there is no more than moderate disintegration except for small pieces that may have been present.
- (2) Flakes. The units are reasonably uniform in tenderness and texture; are practically free from any tough (or "leathery") units; and there may be considerable disintegration of the pieces but not to the degree of a grainy applesauce consistency.
- (3) Sauce pieces. The mass has a reasonably uniform texture and finish ranging from that of a coarse, grainy applesauce to a fine, grainy applesauce, without practically any hard particles.
- (b) (B) classification. If the dehydrated apples possess a reasonably good texture, a score of 14 to 16 points may be given. Dehydrated apples that fall into this classification shall not be graded above U. S. Grade B or U. S. Choice, regardless of the total score for the product (this is a limiting rule). "Reasonably good texture" means with respect to the dehydrated product that

the units are brittle; and, upon cooking in accordance with the methods outlined in this subpart, the textures of the respective styles are as follows:

- (1) Pie pieces; wedges. The units are fairly uniform in tenderness and texture but moderately free from any tough (or "leathery") units; and there may be more than moderate disintegration except for small pieces that may have been present.
- (2) Flakes. The units are fairly uniform in tenderness and texture but moderately free from any tough (or "leathery") units; and the pieces may have become disintegrated to the degree of a grainy applesauce consistency.
- (3) Sauce pieces. The mass has a fairly uniform texture and finish ranging from that of a coarse, grainy applesauce to a fine, grainy applesauce; and hard particles may be noticeable but not objectionable.
- (c) (SStd) classification. Dehydrated apples that fail to meet the requirements of paragraph (b) of this section may be given a score of 0 to 13 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

#### EXPLANATIONS AND METHODS OF ANALYSES

- § 52.2350 Explanations of methods and analyses—(a) Moisture method. "Moisture" in dehydrated apples is determined in accordance with the official method applicable to dried fruits as outlined in the "Official Methods of Analysis of the Association of Official Agricultural Chemists."
- (b) Cooking procedures. A representative sample of not less than 2 ounces avoirdupois to approximately 4 ounces avoirdupois is recommended for purposes of the cooking procedures in this paragraph. The procedures for cooking to ascertain compliance with requirements for color and texture are as follows for the respective styles:
- (1) Pie pieces. Add 1 part, by weight, of pie pieces to 6 parts, by weight, of water just below the boiling point; cover, bring to a boil, and simmer for 20 minutes.
- (2) Flakes. Add 1 part, by weight, of the flakes to 5 parts, by weight, of water

just below the boiling point; cover. bring to a boil, and simmer for 15 minutes.

(3) Wedges. Add 1 part, by weight, of the wedges to 6 parts, by weight, of water just below the boiling point; cover, bring to a boil, and simmer for 30 minutes.

(4) Sauce pieces. Add 1 part, by weight, of the sauce pieces to 8 parts, by weight, of water just below the boiling point; cover, bring to a boil, and simmer

for 15 minutes.

(c) Sifting methods. The technique for ascertaining compliance with the requirements for pieces that pass through U.S. Standard No. 4, No. 8, and No. 16 sieves is as follows:

(1) Pie pieces. (i) From a 4-ounce representative sample of dehydrated apple "pie pieces," remove all pieces which are <sup>3</sup><sub>4</sub>-inch or more in their longest dimension;

(ii) Place the remainder of the sample on a U. S. Standard No. 4, 8-inch diameter, full-height sieve nested on top of a U. S. Standard No. 8, 8-inch diameter, full-height sieve to which a bottom pan has been attached;

(iii) Place the assembly on a smooth level surface and with a steady, fairly rapid sieving motion, move the assembly approximately 20 inches in a straight line and return to its original position, repeating the movement 20 times;

(iv) Weigh the fine material sifted through to the bottom pan and calculate on the basis of the original sample (under subdivision (i) of this subparagraph) as the percentage which passed through

the No. 8 sieve; and

- (v) Weigh the material sifted through the No. 4 sieve and remaining on the No. 8 sieve; calculate on the basis of the original sample (under subdivision (i) of this subparagraph) and add the percentage which remained on the No. 8 sieve to the percentage which passed through the No. 8 sieve (under subdivision (iv) of this subparagraph) as the total percentage which passed through the No. 4 sieve.
- (2) Flakes. (i) From a 4-ounce representative sample of dehydrated apple "flakes" remove all pieces which are 3/4-inch or more in their longest dimension;
- (ii) Place the remainder of the sample on a U. S. Standard No. 8, 8-inch

diameter, full-height sieve nested on top of a U. S. Standard No. 16, 8-inch diameter, full-height sieve to which a bottom pan has been attached;

(iii) Place the assembly on a smooth level surface and with a steady, fairly rapid sieving motion, move the assembly approximately 20 inches in a straight line and return to its original position, re-

peating the movement 20 times;

(iv) Weigh the fine material sifted through to the bottom pan and calculate on the basis of the original sample (under subdivision (i) of this subparagraph) as the percentage which passed through

the No. 16 sieve; and

- (v) Weigh the material sifted through the No. 8 sieve and remaining on the No. 16 sieve; calculate on the basis of the original sample (under subdivision (i) of this subparagraph) and add the percentage which remained on the No. 16 sieve to the percentage which passed through the No. 16 sieve (under subdivision (iv) of this subparagraph) as the total percentage which passed through the No. 8 sieve.
- (3) Sauce pieces. (i) From a 4-ounce representative sample of dehydrated apple "sauce pieces" remove all pieces which in their smallest dimensions will not pass readily through 0.446-inch square openings by gentle hand pressing;
- (ii) Place the remainder of the sample on a U. S. Standard No. 8, 8-inch diameter, full-height sieve nested on top of a U. S. Standard No. 16, 8-inch diameter, full-height sieve to which a bottom pan has been attached;

(iii) Place the assembly on a smooth level surface and with a steady, fairly rapid sieving motion, move the assembly approximately 20 inches in a straight line and return to its original position, repeating the movement 20 times;

(iv) Weigh the fine material sifted through to the bottom pan and calculate on the basis of the original sample (under subdivision (i) of this subparagraph) as the percentage which passed

through the No. 16 sieve; and

(v) Weigh the material sifted through the No. 8 sieve and remaining on the No. 16 sieve; calculate on the basis of the eriginal sample (under subdivision (i) of this subparagraph) and add the percentage which remained on the No. 16 sieve to the percentage which passed through the No. 16 sieve (under subdivision (iv) of this subparagraph) as the total percentage which passed through the No. 8 sieve.

#### LOT INSPECTION AND CERTIFICATION

§ 52.2351 Ascertaining the grade of a lot. The grade of a lot of dehydrated apples covered by these standards is determined by the procedures set forth in the Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Processed Food Products (§§ 52.1 through 52.87; 22 F. R. 3535).

#### SCORE SHEET

§ 52.2352 Score sheet for dehydrated apples.

Net weight Moisture content (percent Style	
Factors	Score points
Color	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
Uniformity of size	$ \begin{array}{c c} & 20 & \begin{pmatrix} (A) & 17-5 \\ (B) & 114-5 \\ (SStd) & 10-5 \end{pmatrix} $
Absence of defects	$\begin{array}{c c} & 40 & (A) & 34-\\ (B) & 128-\\ (SStd) & 10-\\ \end{array}$
Texture	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
Total seore	100

<sup>&</sup>lt;sup>1</sup> Indicates limiting rule.

The United States Standards for Grades of Dehydrated (Low-moisture) Apples (which is the first issue) contained in this subpart shall become effective 30 days after the date of publication in the Federal Register.

Dated: October 25, 1955.

[SEAL] RO

ROY W. LENNARTSON,
Deputy Administrator,
Marketing Services.

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